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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/571,797

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Salvador Aldrett-Lee

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The Dow Chemical Company
Intellectual Property Section
P.O. Box 1967
Midland, MI 48641-1967

EXAMINER

GALLIS, DAVID E

ART UNIT

PAPER NUMBER

1625

MAIL DATE

DELIVERY MODE

02/17/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/571,797		ALDRETT-LEE ET AL.	
	Examiner		Art Unit	
	DAVID E. GALLIS		1625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-22 and 24-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-22 and 24-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/9/09</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 16 through 22 and 24 through 36 are pending. Claim 16 has been amended. Claim 23 has been canceled. Applicants' claim to foreign priority by application PCT/US2003/030076 filed September 24, 2003 is acknowledged. Applicants' amendments and arguments filed November 9, 2009 have been entered and carefully considered.

Prior Rejections

2. With regard to the prior rejection of claims 1, 5, 8, 10, 12, 16-20, 29, 31 and 33 under 35 U.S.C. 102(b), Applicants have canceled claims 1 through 15 outright, and argue that the amendment to claim 16 requiring the metal to comprise at least about 10% copper overcomes the rejection based on anticipation by Nakahara et al.. Applicants' argument is persuasive. Therefore, the rejection of claims 16-20, 29, 31 and 33 as anticipated by Nakahara et al. is hereby withdrawn.

3. With regard to the prior rejection of claims 2-4, 9, 11, 13-15, 21-26, 30, 32 and 34-36 under 35 U.S.C. 103(a), Applicants have canceled claims 1 through 15 and 23 outright, and argue that the amendment to claim 16 requiring the metal to comprise at least about 10% copper overcomes the rejection as Nakahara et al. alone does not motivate one of ordinary skill in the art to increase the level of copper in an apparatus in an acrylic acid-containing system. Applicants' argument is not found persuasive. It would be obvious to try alloys of greater copper content with a high likelihood of success. Neither the Applicants or the prior art has reported a quantitative evaluation of copper content, and in the absence of such nothing can be considered unique about

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copper contents of 10% or more or 7% or more. Therefore, the rejection of claims 21, 22, 24-26, 30, 32 and 34-36 as an obvious over Nakahara et al. is maintained for reasons of record.

4. With regard to the prior rejection of claims 6, 7, 27 and 28 under the first paragraph of 35 U.S.C. 112, Applicants have canceled claims 6 and 7 outright, and argue that the specification does in fact enable the artisan to use copper/tin and copper/zinc alloys (see page 5, last paragraph). Applicants' argument is found persuasive. Therefore, the rejection of claims 27 and 28 as lacking enablement is hereby withdrawn.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 16, 29, and 34 through 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Kambara et al. (US 5,922,912, July 13, 1999, cited by Applicants').

7. Independent claim 16 is drawn to a method for inhibiting polymerization during at least one of manufacture, purification, handling and storage of a subject ethylenically unsaturated monomer, the method comprising the steps of: introducing the monomer into apparatus for at least one of the manufacture, purification, handling and storage of the monomer, at least a portion of the apparatus in contact with the monomer comprising a metal containing sufficient copper to inhibit, in the presence of a gas

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containing oxygen, polymerization of the monomer within the apparatus. Wherein the metal comprises at least about 10% copper; and providing a gas containing oxygen in the interior of the apparatus containing the monomer; thereby inhibiting polymerization of the monomer in the apparatus. Claims 29 and 34 through 36 further limit claim 16 to various apparatus types, gas inlet configurations, and oxygen content.

8. Kambara et al. clearly anticipate claims 16 and 34 through 36 teaching the concentration of aqueous acrylamide (AAM, an ethylenically unsaturated monomer), wherein the polymerization of which is inhibited by copper surfaces (heat exchange and piping) in the presence of an oxygen containing gas (air)(see column 4, lines 20-28). Kambara et al. Teaches an evaporator system with copper-made piping and a copper-made inner surface in contact with the AAM in which air (21% oxygen) is introduced to the concentrated AAM prior to its introduction (or re-introduction) to the copper lined gas-liquid separator (see Figure 3 and column 11, lines 9-34).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 16 through 22, 24 through 26 and 29 through 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakahara et al. (US 2002/165407, November 7, 2002, cited by Applicants).

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11. Independent claim 16 is drawn to a method for inhibiting polymerization during at least one of manufacture, purification, handling and storage of a subject ethylenically unsaturated monomer, the method comprising the steps of: introducing the monomer into apparatus for at least one of the manufacture, purification, handling and storage of the monomer, at least a portion of the apparatus in contact with the monomer comprising a metal containing sufficient copper to inhibit, in the presence of a gas containing oxygen, polymerization of the monomer within the apparatus. Wherein the metal comprises at least about 10% copper; and providing a gas containing oxygen in the interior of the apparatus containing the monomer; thereby inhibiting polymerization of the monomer in the apparatus. Claims 17 through 22 further limit claim 16 to various optional ethylenically unsaturated monomers. Claims 24 through 26 further limit claim 16 to various optional metals and alloys of varying copper content. Claims 29 through 36 further limit claim 16 to various apparatus types, gas inlet configurations, and oxygen contents.

12. Claims 16 through 22, 24 through 26 and 29 through 36 are obvious over Nakahara et al. clearly teaching a process and apparatus for the production of production of acrylic and methacrylic acid, wherein the apparatus comprises a copper and nickel containing alloy and the process and apparatus effectively inhibits the polymerization of acrylic and methacrylic acid monomers in the presence of molecular oxygen (page 1, ¶0011 through ¶0013 and page 2, EXAMPLE 1, ¶0048). The alkyl groups and monomers of instant claims 18 through 22 are all obvious variants of one another and would be considered such by one of skill in the art. Nakahara et al. teach

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apparatuses composed of such alloy to include reactors, absorbers, stripping columns, extraction columns, distillation columns, and their fittings such as heat exchangers, piping and tanks (page 1, ¶0016), and specifically exemplify a distillation system inclusive of the distillation column and tray plates (¶0048). Furthermore, it is prima facie obvious that packing and or trays associated with a distillation column apparatus would be composed of the claimed polymerization inhibiting metal, since these are the surfaces that are designed with maximal surface area and required to be in contact with the monomer as matter of function. Likewise, since Narahara et al. show inhibition with a maximum copper content of the metal of 7%, greater amounts (i.e. 10%, 25 to 75% and 30 to 50%) would obviously offer at least the same level of inhibition, or greater with a high probability of success (see ¶0017 – ¶0040 and EXAMPLES 1-3 and COMPARATIVE EXAMPLE 1). Nakahara et al. also teach the use of molecular oxygen (an oxygen containing gas) in an amount based on monomer vapor content (see ¶0044 and ¶0049). The instantly claimed oxygen content of the gas introduced is mere design selection and would be obvious to one skilled in the art. Nakahara et al. introduce the gas into the re-boiler of a distillation system, which obviously constitutes the lower portion of the apparatus or distillation column.

Claim Rejections - 35 USC § 112

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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14. Claims 24 through 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

15. Each of claims 24 through 28 depend from, either directly or serially, canceled claim 23. Correction to dependency for these claims is required.

Conclusion

16. No claims are allowed.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Gallis whose telephone number is 571-272-9068. The examiner can normally be reached on Mon-Thur 8:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on 571-272-1600. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Janet L. Andres/

Supervisory Patent Examiner, Art Unit 1625

David E. Gallis

Patent Examiner